



Indicators of Environmental Quality

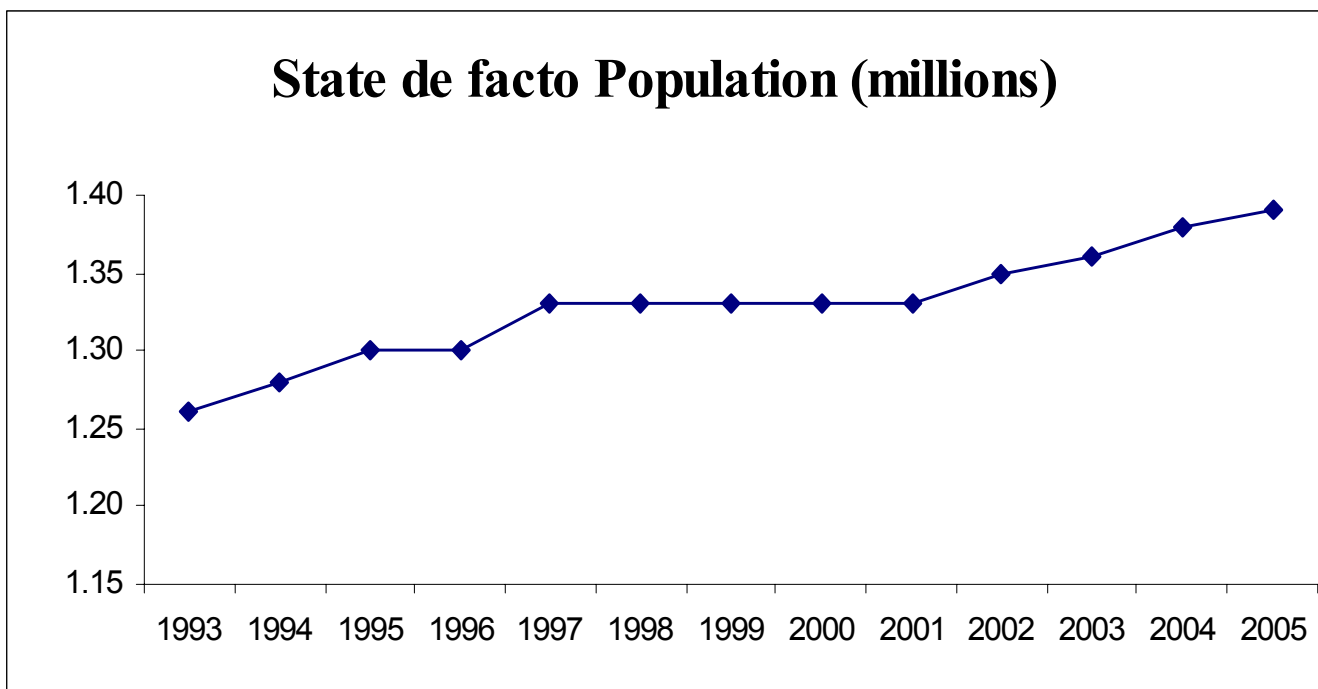
State of Hawaii
Department of Health
Environmental Health Administration
April 2008

www.hawaii.gov/health/environmental

Introduction

Hawaii's de facto population (which include visitors present but excludes residents temporarily absent) grew from 1.26 million in 1993 to 1.39 million in 2005, and is projected to grow to 1.72 million by 2020. The rise in population not only means a greater pressure on the natural resources, but also an increase in the amount of waste products generated that are released into the air, water and land. Recently the trend has shown more growth to the neighbor islands, which means the rural areas are now also facing some of the stresses of human impact.

Since we live on isolated islands in the middle of the sea, this means that we need to be very aware of the situations that are, or can be, created by polluting our limited land space. The effects of environmental health are closely tied to the public health of our residents and visitors. As the population continues to increase, so will the challenges to balance the needs of health, environment, and economics of Hawaii.



Note: the vertical axis does not begin with zero

Source: State of Hawaii, Dept of Business, Economic Development and Tourism Data Book 2005 and The Office of Environmental Quality Control 2006 Environmental Council Annual Report

Document Notes

Environmental Indicator: a tool that uses the best available data to measure the quality of the environment and/or progress made in protecting the environment.

This report includes a selection of nineteen environmental indicators, each occupying a single page. Each indicator shows a data set, a chart based on those data, and a discussion of the indicator and the data upon which it is based. Only data collected by, through or about the Hawaii State Department of Health programs are included.

The discussion accompanying each indicator is separated into five sections:

Explanation: the first section explains the data and chart, focusing on the fundamental picture portrayed the chart. Terms and caveats are also discussed in this section.

Implications: An “implications” section follows, with a short and sometimes subjective discussion of what impact the indicator findings may have on public health and the environment, and therefore on the Department of Health’s (DOH) environmental programs.

Data Quality: The third section provides a one-word assessment of data quality for the indicator. Data quality is ranked as either High (\pm 5-10% confidence), Medium (\pm 10-25% confidence) or Low (\pm 25-50% confidence).

The last two discussion sections note the source of the data and comment on whether the data are required of DOH by the U.S. Environmental Protection Agency (EPA). In most cases, when a percentage scale is used in a chart, the scale ranges from 0 to 100 percent. To more clearly show trends, some chart scales extend from values of 50% or 75% to 100%.

Data used are organized on a federal fiscal year (FFY) calendar, October through September, unless otherwise noted, and usually cover the years 2002-2007 in order to show a five-year trend for each indicator. Some indicators do not have data available for that period, and some provide only a “snap shot” of information for a single year.

CAB	-Clean Air Branch
CWB	-Clean Water Branch
DOH	-Department of Health
EHA	-Environmental Health Administration
EPA	-U. S. Environmental Protection Agency
EPO	-Environmental Planning Office
IRHB	-Indoor and Radiological Health Branch
SDWB	-Safe Drinking Water Branch
SHWB	-Solid & Hazardous Waste Branch
SLD	-State Laboratories Division
VCB	-Vector Control Branch
WWB	-Wastewater Branch

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Ambient Levels of Sulfur Dioxide Compared to National Standards

Explanation: The national standard for sulfur dioxide (SO₂) concentrations was set by EPA at 80 micrograms/cubic meter (µg/m³) as the annual average limit of SO₂ in ambient air. The Honolulu air monitoring station is located atop the DOH building downtown. Data from this station are shown here as representative of SO₂ concentrations in Hawai'i. The results show that the annual average over the past five years, 1-3 µg/m³, has been well below the standard.

Implications: Hawai'i's annual average SO₂ concentrations are very low compared to the national standard. On persistent Kona wind days, volcanic emissions from the island of Hawai'i can be transported to O'ahu and are experienced mostly as sulfates (SO₄). These sulfates are included in the PM₁₀ (particulate) category expressed on the next page.

For a statewide report on air: www.hawaii.gov/health/environmental/air/cab/cabmaps/report.html

For real/near time monitoring data for Oahu and Hawaii: www.hawaii.gov/don/air-quality/index.html

Sulfur Dioxide Data

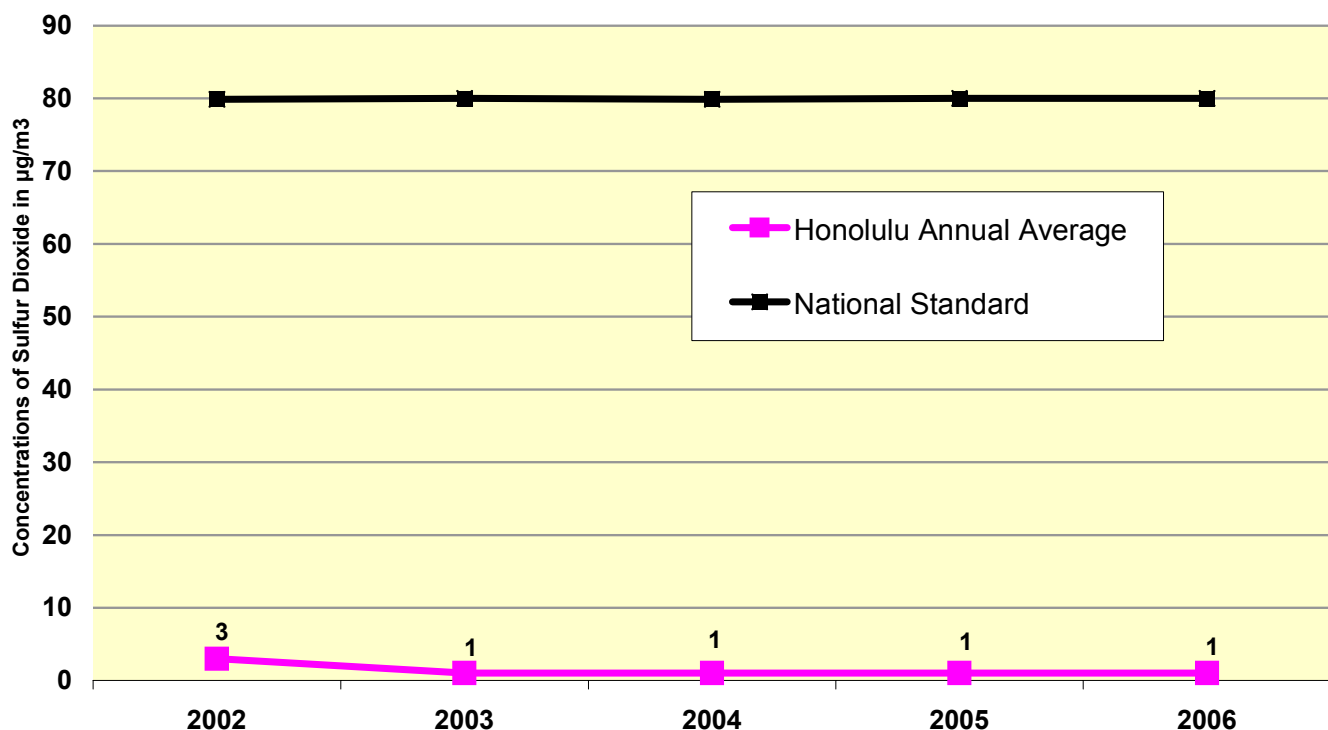
Data Quality: High (± 5-10% confidence).

Source: DOH Clean Air Branch.

Data are required by the EPA.

FFY	Honolulu Annual Average of SO ₂	National Standard for SO ₂
2002	3	80
2003	1	80
2004	1	80
2005	1	80
2006	1	80

Hawai'i's Annual Average Sulfur Dioxide Levels (Honolulu Station) Compared to the National Standard



Ambient Levels of Air-borne Particulates Compared to National Standards

Explanation: The EPA has set the annual average of the particulate matter, or PM₁₀, at 50 micrograms/cubic meter (µg/m³). PM₁₀ is defined as particulates with an aerodynamic diameter less than or equal to 10 microns. At the Honolulu monitoring station, located in the heart of downtown, the annual average concentration of particulates varied from 14 to 16 µg/m³. At 16 µg/m³ this annual average is 72% below EPA's standard.

Implications: The concentrations measured in Honolulu are far below the national standard. The visual trend line shows that, within the past 5 years, the particulate levels have stayed on a fairly even line between 14-16 µg/m³. Concentrations of PM₁₀ are not significantly affected by sulfates from volcanic emissions carried over O'ahu by Kona winds.

For a statewide report on air: www.hawaii.gov/health/environmental/air/cab/cabmaps/report.html

For real/near time monitoring data for Oahu and Hawaii: www.hawaii.gov/don/air-quality/index.html

Air-borne Particulates Data

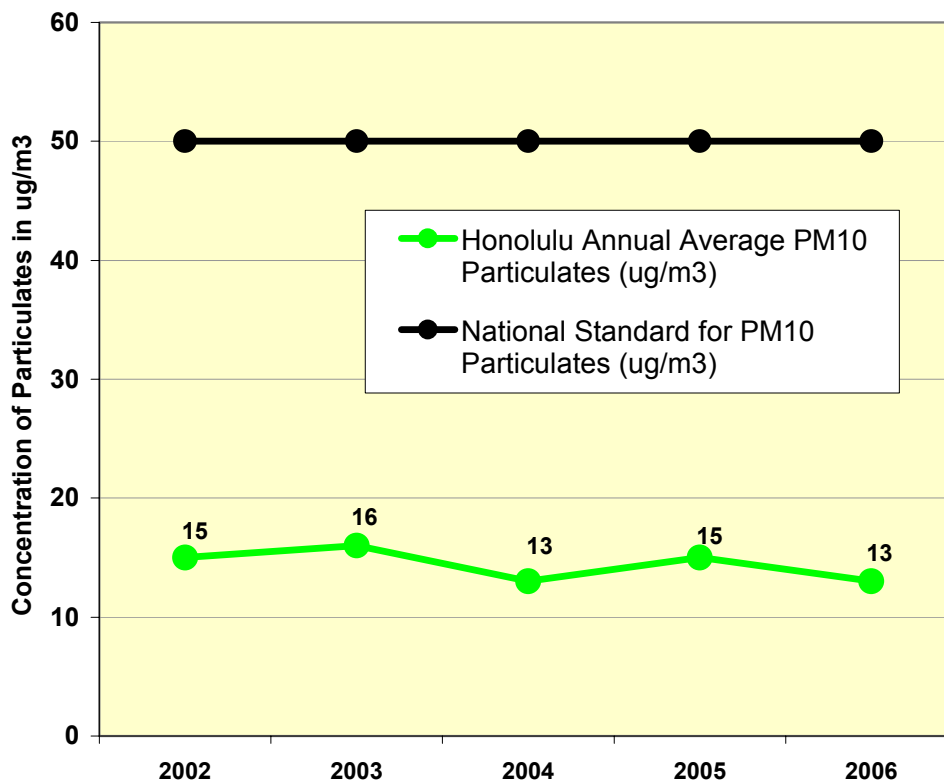
Data Quality: High (± 5-10% confidence).

Source: DOH Clean Air Branch

Data are required by the EPA.

FFY	Honolulu Annual Average of PM ₁₀	National Standard for PM ₁₀
2002	15	50
2003	16	50
2004	13	50
2005	15	50
2006	13	50

Hawai'i's Annual Average Particulate Level (Honolulu Station) Compared to the National Standard



Ambient Levels of Carbon Monoxide Compared to National Standards

Explanation: EPA set the 1-hour average limit for carbon monoxide (CO) concentrations in ambient air at 40,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). This indicator reflects CO data measured at the Honolulu monitoring station located in the heart of downtown, an area with heavy automobile traffic. The CO measurement differs from the other indicators in this report as it reflects the highest 1-hour value each year rather than an annual average. In addition to the 1-hour national standard, EPA has set an 8-hour standard for CO at 10,000 $\mu\text{g}/\text{m}^3$.

Implications: Although there are some fluctuations in the annual averages, Hawai'i's recorded 8-hour values are consistently well below the national standard.

For a statewide report on air: www.hawaii.gov/health/environmental/air/cab/cabmaps/report.html

For real/near time monitoring data for Oahu and Hawaii: www.hawaii.gov/don/air-quality/index.html

Carbon Monoxide Data

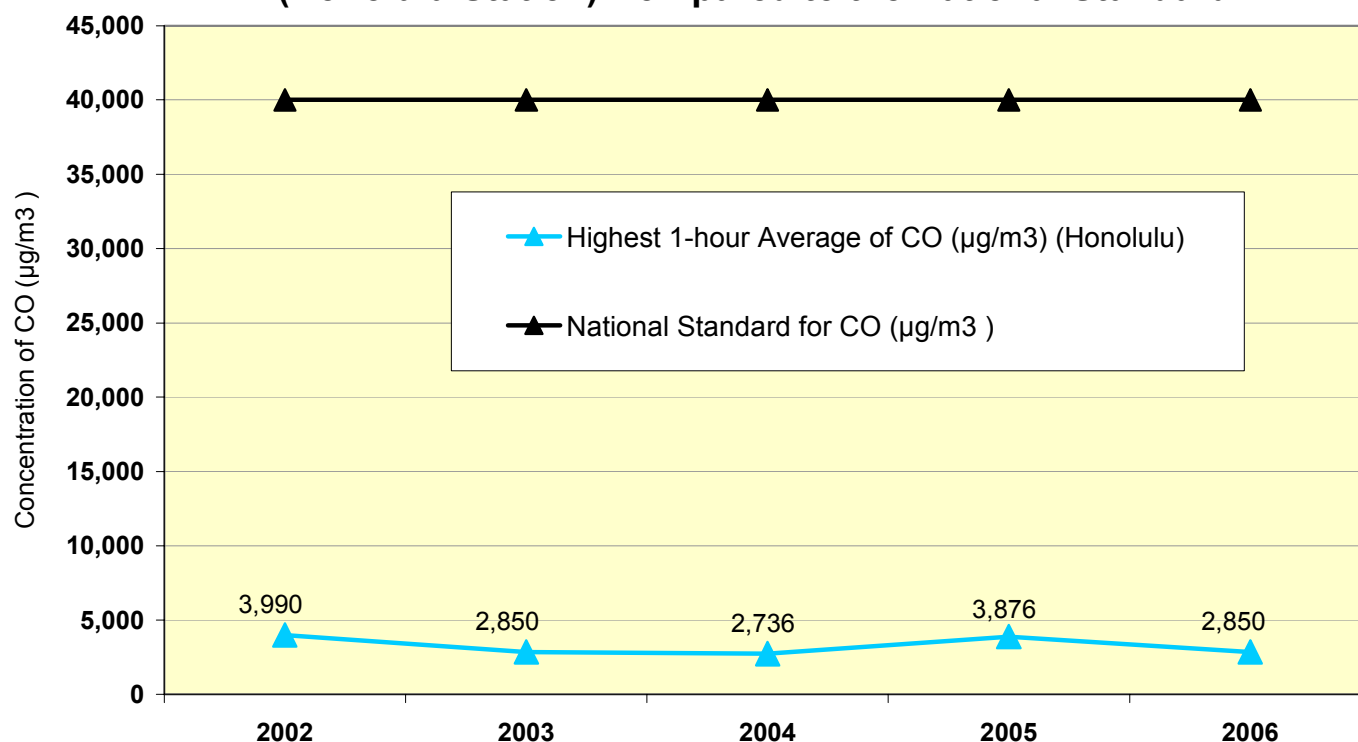
Data Quality: High (± 5 -10% confidence).

Source: DOH Clean Air Branch

Data are required by the EPA.

FFY	Highest 1-hour Average of CO (Honolulu)	National Standard for CO
2002	3,990	40,000
2003	2,850	40,000
2004	2,736	40,000
2005	3,876	40,000
2006	2,850	40,000

Hawai'i's Highest 1-hour Average for Carbon Monoxide (Honolulu Station) Compared to the National Standard



Percentage of Schools in Compliance with Required Asbestos Management Plan

Explanation: Buildings constructed before 1980 may contain asbestos in many materials including flooring, pipe insulation, structural fireproofing, mechanical areas, ceiling materials, and wall plaster. If asbestos-containing building materials (ACBMs) are not properly identified and managed they may be unintentionally disturbed, causing the release of asbestos fibers. ACBMs still exist in Hawai'i's schools. EPA regulations and Hawaii Administrative Rules require each school to prepare an Asbestos Management Plan, which documents the presence and condition of ACBMs and specifies provisions for properly managing any ACBM present. Plans are required to contain inspection and re-inspection reports; periodic surveillance reports; response action information; notices sent to parents and employees; designated person information and custodian training documents. Since the program's inception in 1988, over 400 schools have been inspected by the Indoor and Radiological Health branch. Compliance monitoring is ongoing. For the purposes of this measurement, compliance is assumed unless an inspection proves otherwise. The number of schools required to comply will change as new schools open and existing schools are closed.

Implications: The chart shows an increase in compliance since 2000, likely the result of increased inspections along with greater follow-up activities. Almost all schools in Hawaii have an asbestos management plan, but there is not necessarily a direct correlation between the existence of a plan and its proper implementation. The improvement in compliance since 2000 has resulted from increases in both the implementation of the plans as well as the additional compliance assistance activities provided by the program. The total number of schools required to comply increased due to the addition of private and charter schools to the system across the state.

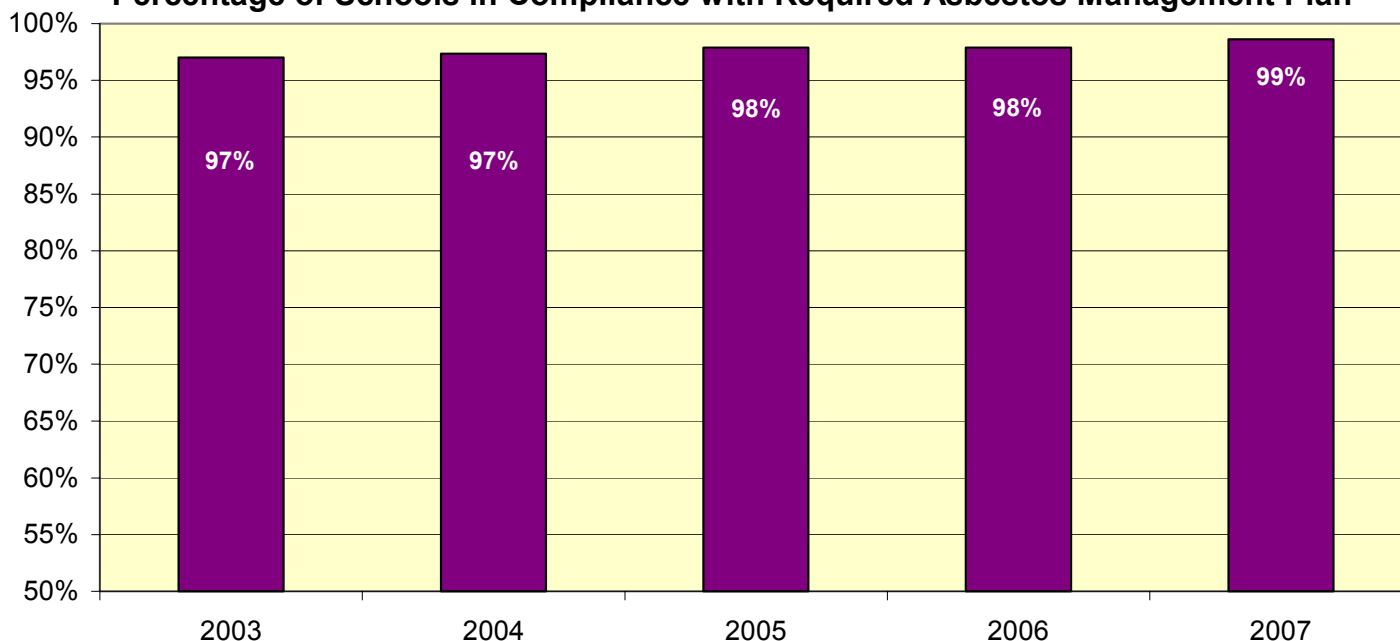
Data Quality: High (± 5 -10% confidence).

Source: Tom Lileikis (IRHB)

Data are required by the EPA

FFY	Total Number of Schools Required to Comply	Number of Schools in Compliance	Percentage of Schools in Compliance with Required Plan
2003	416	404	97%
2004	416	405	97%
2005	423	414	98%
2006	423	414	98%
2007	437	431	99%

Percentage of Schools in Compliance with Required Asbestos Management Plan



Contaminated Sites with Clean-up Completed

Explanation: Progress made in the clean-up of contaminated sites, broken down into three categories, is measured by the date of completion of the clean-up process. The vast bulk of the clean-ups are comprised of leaking underground storage tank (LUST) sites. The next three indicators on the following pages will provide more specific data relating to the progress of each site category.

Implications: Staff has brought a backlog of LUST release cases into compliance with Hawai'i's UST rules.

Data Quality: High (\pm 5-10% confidence).

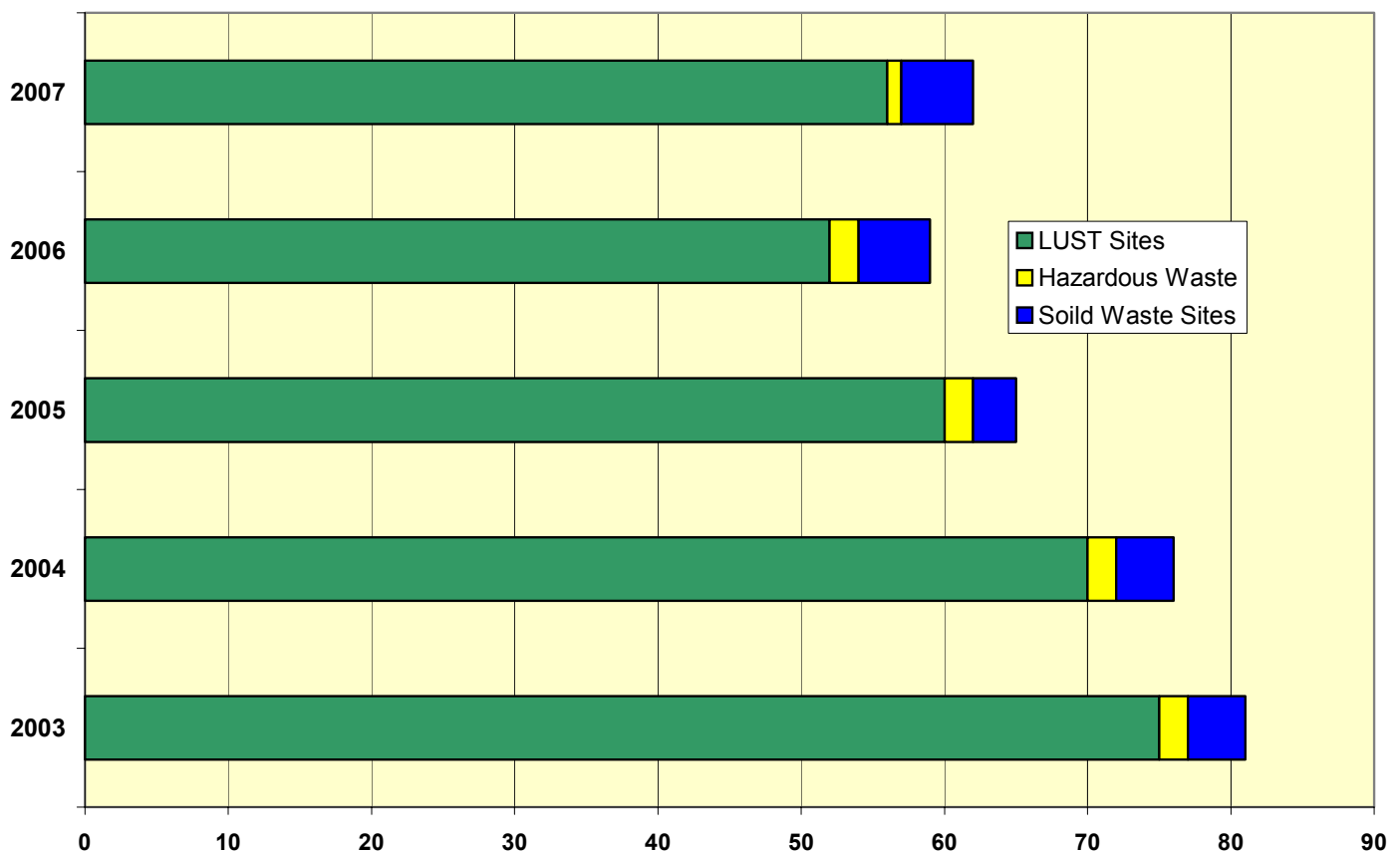
Sources: Grace Simmons (SHWB), Lane Otsu (SHWB), and Roxanne Kwan (SHWB).

Data are required by the EPA.

Contaminated Sites Clean-up Data

FFY	Hazardous Waste	Soild Waste Sites	LUST Sites	Total Sites
2003	2	4	75	81
2004	2	4	70	76
2005	2	3	60	65
2006	2	5	52	59
2007	1	5	56	62

Number of Contaminated Sites Cleaned-up



Cumulative Numbers of Leaking Underground Storage Tank Sites with Clean-up Partially Addressed or Completed

Explanation: Of the 1,909 confirmed releases from underground storage tanks from 1987 to 2007, 85% have had 'clean-up' completed. Ten percent of the sites have had 'clean up' partially addressed, (i.e., efforts have begun which: manage contaminated soil, remove free product, manage dissolved petroleum, and/or monitor the groundwater or soil), and 5% have yet to be addressed.

Implications: Some of the data for this indicator are included with data listed on the previous page; the data on this page pertains only to LUST sites and includes releases that have received no clean-up activity or that have only had clean-up partially addressed. Clean-ups for this category of contaminated sites has increased. Of the 5% of the sites that have not been addressed, some are recent releases for which the DOH has yet to receive information on clean-up efforts. None of the unaddressed sites constitutes an emergency situation.

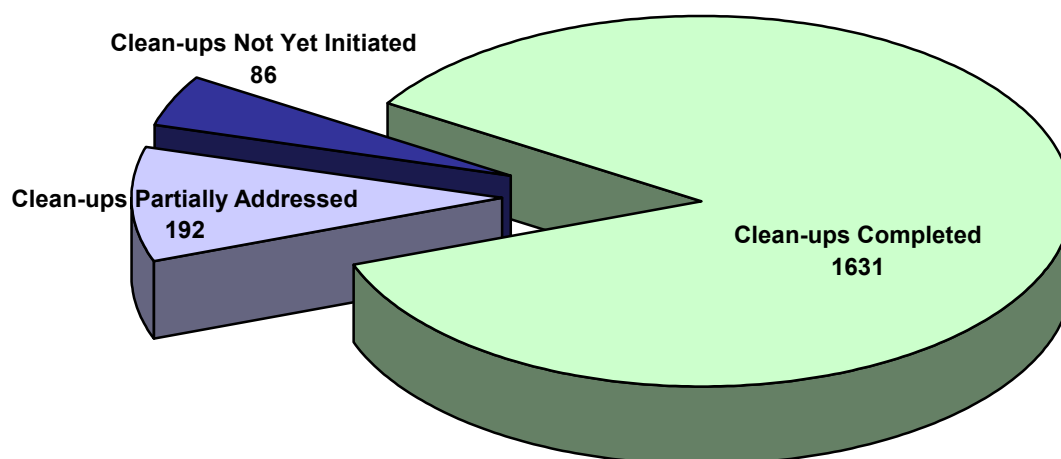
Data quality: High (\pm 5-10% confidence).

Source: Roxanne Kwan (SHWB).

Data are required by the EPA.

LUST Site Clean-up Data							
FFY	Total Tanks	Active Tanks	Closed Tanks	Confirmed Releases	Clean-ups Partially Addressed	Clean-ups Not Initiated	Clean-ups Completed
2007	7,916	1,895	6,021	1,909	192	86	1,631
2006	7,832	2,001	5,831	1,874	206	94	1,574
2005	7,803	2,041	5,762	1,840	236	100	1,504
2004	7,775	2,076	5,699	1,803	253	113	1,437
2003	6,748	1,867	4,881	1,732	290	57	1,385

Status of Leaking Underground Storage Tank Sites Cleaned Up as of FY 2007



Quantity of Hazardous Waste Generated

Explanation: Hazardous waste generation, as presented in this indicator, is reported to EPA by “large quantity generators” biennially in odd years. Data from the last reporting cycle for 2005 is available on the EPA website (www.epa.gov). Overall, the quantity of waste generated, as shown in this indicator, has ranged from roughly 780 to 1700 tons annually during the period from 1997 to 2005. Hazardous wastes in wastewater have been excluded from the indicator because the data quality for wastewater volumes is particularly questionable, especially since volume was removed as an EPA reporting requirement in 1997*. The majority of hazardous wastes in Hawai‘i are sent to permitted commercial treatment storage disposal facilities on the mainland, while the recyclable solvents are processed in state. Hazardous waste is defined in 40 CFR 261.3 as waste having any of the four hazardous characteristics: ignitability, corrosivity, reactivity, or toxicity, or a waste specially listed as a substance to be regulated as a hazardous waste. Common examples include paint, battery acid, oil, lead, and waste bleaches. The 2006/2007 data will be available next year.

Implications: Compared to other states, hazardous waste generation has been relatively low in Hawai‘i. During the eight-year period represented by this indicator, hazardous waste generation appears to be decreasing after a slight increase in 1997. The significant decrease in waste generation for 2001 is linked to the efforts of the waste minimization coordinator and a stronger inspection and enforcement presence. The increases in 2003 and 2005 may be due to a one-time generation for clean-up of contaminated sites.

* However, the amount on the EPA website for 2001 does include 464,076 tons of wastewater generated by Tesoro Refinery. In previous reports, Tesoro’s wastewater generation was not included.

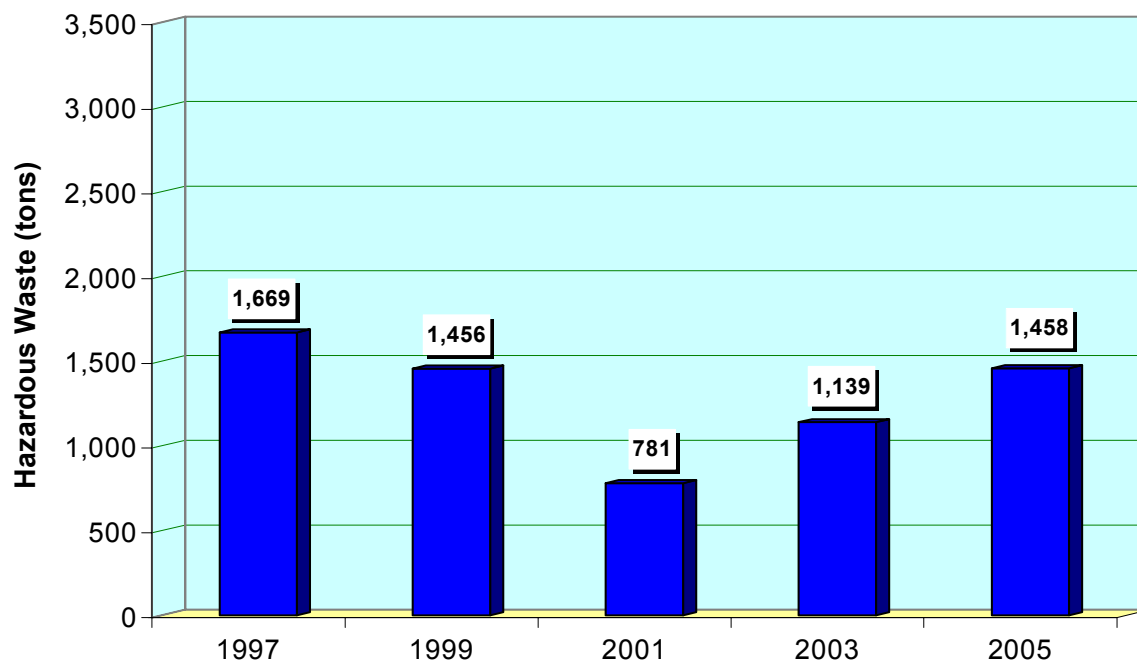
Data Quality: Low (\pm 25-50%) confidence.

Source: Grace Simmons (SHWB).

Data are required by the EPA.

Hazardous Waste Generation Data	
FFY	Hazardous Waste Generated in Tons
1997	1,669
1999	1,456
2001	781
2003	1,139
2005	1,458

Quantity of Hazardous Waste Generated in Hawaii



Percentage of Solid Waste Recycled

Explanation: The amount of waste being landfilled has been increasing over the past seven to eight years. The percentage of solid waste diverted from landfills for recycling or reuse in Hawaii has also slowly increased over the past several years.

Implications: The State's current diversion rate stands at 36% and is in line with the most recent national statistics. The Environmental Protection Agency (EPA) data indicates a national recycling rate of 28% in 1999. The State's goal of 50% waste diversion was set in 1991 and mirrored the EPA's recycling goal at the time. The EPA has since revised its recycling goal to 35%. This change was made in recognition of the fact that states and municipalities needed a broader time frame in which to reach higher waste reduction levels.

Some mainland states and municipalities have taken great strides in increasing recycling rates, while Hawaii's commercial recyclers continue to deal with long-standing issues. Most notable is the high cost of shipping to the Far East or the mainland U.S. where most recycling markets are located. Volatility in recycled materials markets, combined with the relatively small amounts of materials generated in Hawaii, also continues to challenge recyclers.

Data Quality: 2003-2005: Medium (± 10 -20%) confidence;
2001-2002: Low (± 25 -50%) confidence

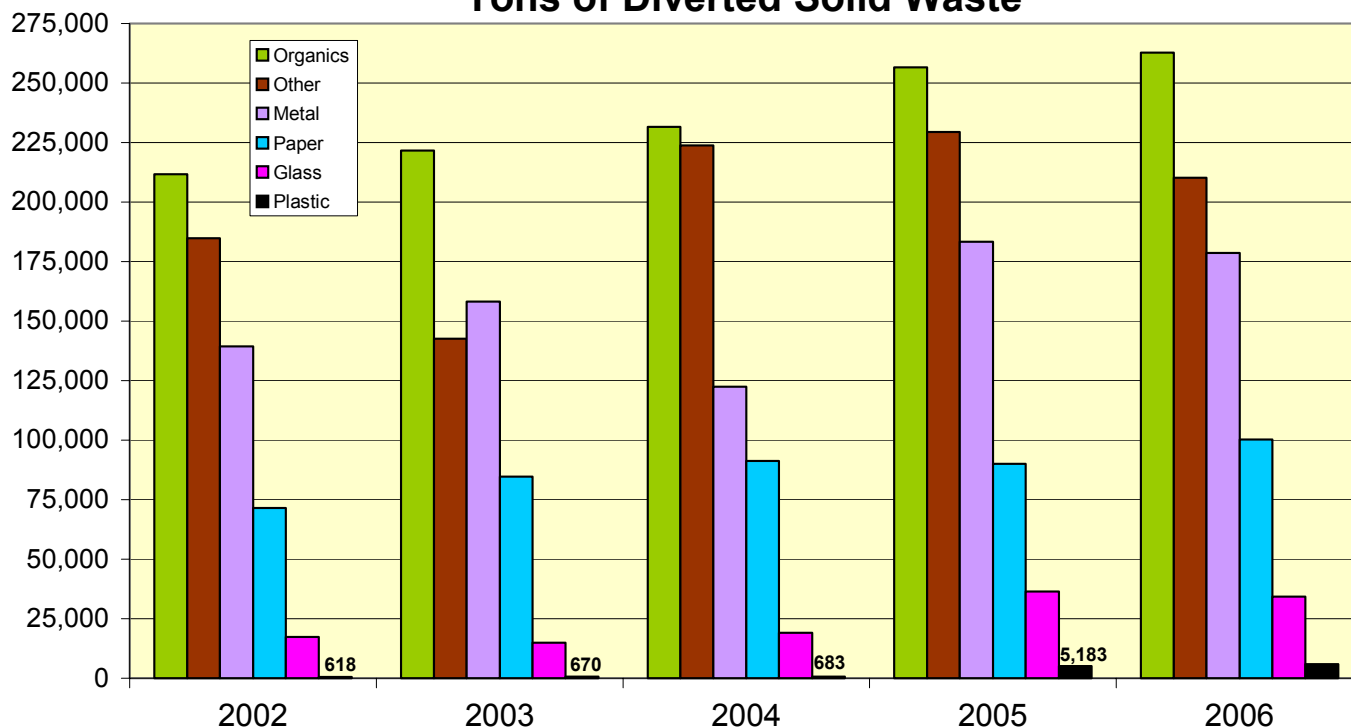
Source: Lane Otsu (SHWB)

Data are not required by the EPA.

Total Solid Waste Recycling Data (in tons)

State FY	Produced Statewide	Disposed Statewide	Diverted Statewide	Percentage Diverted
2002	2,115,313	1,489,974	625,339	29.6%
2003	2,140,648	1,517,915	622,733	29.1%
2004	2,116,724	1,427,904	688,820	32.5%
2005	2,227,124	1,425,752	801,373	36.0%
2006	2,526,134	1,733,889	792,245	31.4%

Tons of Diverted Solid Waste



Pounds of Solid Waste Generated Per Person

Explanation: On the average, each person in Hawaii generated over nine pounds of solid waste per day. The national average for 2006, as compiled by the Environmental Protection Agency, is 4.6 pounds per day*.

Implications: Hawaii faces many challenges with solid waste issues. Costs of shipping, program funding, and issues with commercial recyclers affect solid waste programs in Hawaii. However, with landfills becoming an issue on all islands, Hawaii needs to improve the awareness of the consequences of waste generation when dealing with limited landspace and related costs. The HI-5 beverage container recycling program continues to build support, and DOH has been active in promoting messages of “Reduce, Reuse and Recycle.” Laws require that each county develop and maintain an integrated solid waste management (ISWM) plan. The counties of Kauai, Maui and City and County of Honolulu, began the process of revising their existing ISWM plans during the 2006-2007 fiscal year.

*The methodology used by DOH is similar to EPA's, however there are many variables, and the data cannot be compared exactly. Both agencies include green waste and exclude construction and demolition waste.

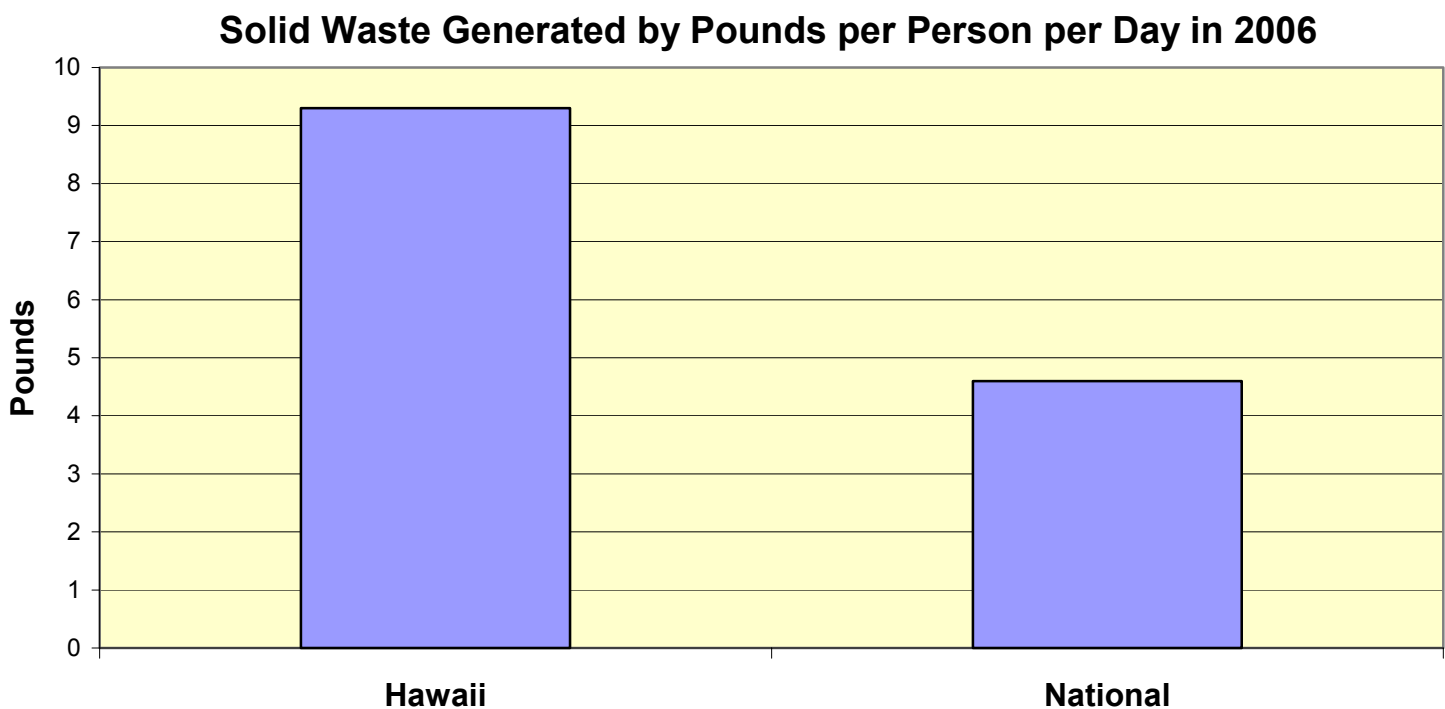
Data Quality: Low ($\pm 25\text{-}50\%$) confidence

Source: Lane Otsu (SHWB)

Data are not required by the EPA.

Solid Waste Generated by Pounds/Person/Day

Calendar Year	Hawaii	National
2006	9.3	4.6



Number of Zoonotic Laboratory Tests for Early Detection or Confirmation of Zoonotic Diseases

Explanation: The main focus for 2007 was preventing West Nile Virus (WNV) from reaching Hawaii. The Vector Control Branch and State Laboratories were at the center of the effort. Mosquitoes were trapped, counted and sorted by VCB Laboratory, then tested at State Laboratories Division for WNV. Birds were necropsied at VCB, then tested at SLD. In addition to WNV, the increase of positive tests for leptospirosis was also a concern, Vector Control was also testing for plague, murine typhus. Though avian influenza was a major concern, the testing was done at the State Departments of Agriculture and Land & Natural Resources, and the Federal Department of Fish & Wildlife.

Implications: Though West Nile Virus did not reach Hawaii in 2007, the prevention efforts will continue to be sustained. WNV was the most high-profile disease, however surveillance and testing must also be continued for other zoonotic diseases that cause threats to public health.

Disease Tested (# Positive)	TOTAL	Oahu	Hawaii	Maui	Kauai
West Nile (mosquito pools*)	3348 (0)	2549 (0)	506 (0)	105 (0)	188 (0)
West Nile (birds)	174(0)	132 (0)	21 (0)	14 (0)	7 (0)
Leptospirosis	1052 (44)	131 (3)	904 (41)	0 (0)	17 (0)
Murine Typhus	381 (30)	233 (29)	126 (0)	10 (0)	12 (1)
Plague	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

* A group of 15-50 insects pooled together for testing purposes. The total number of mosquitoes tested for WNV was 118,659

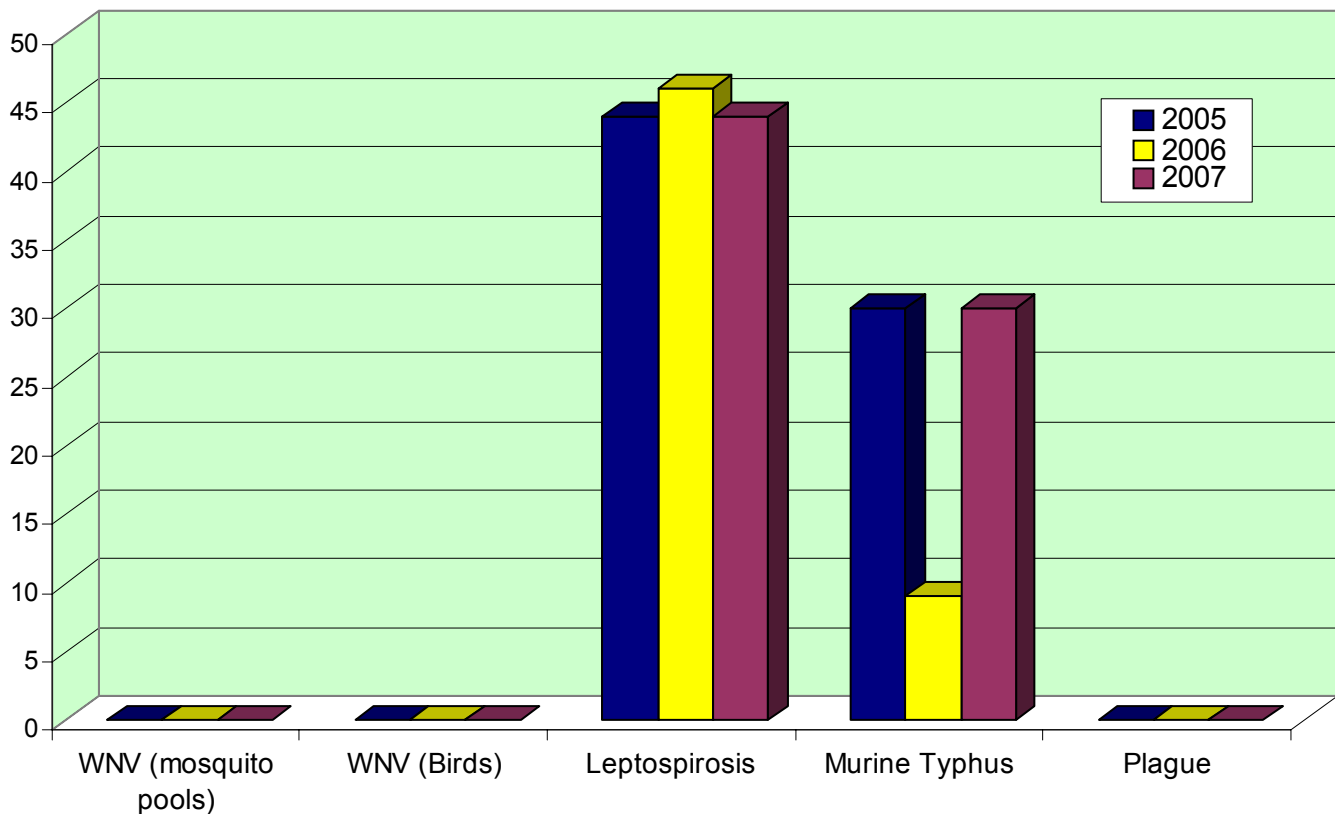
** Rat and mouse sera tested by the indirect fluorescent antibody (IFA) technique

*** Only animals retrieved from ports of entry tested for plague

Source: Wes Warashina (VCB Laboratory)

Data are not required by the EPA.

Number of Positive Findings of Zoonotic Diseases 2005-2007



Oil and Chemical Releases

Explanation: Any releases of oil or chemicals must be reported to DOH. No clear trend exists in the number of oil and chemical releases from 2000 to 2007. The database currently contains only initial information regarding a release. Follow-up information on releases (including volumes of releases) is not included.

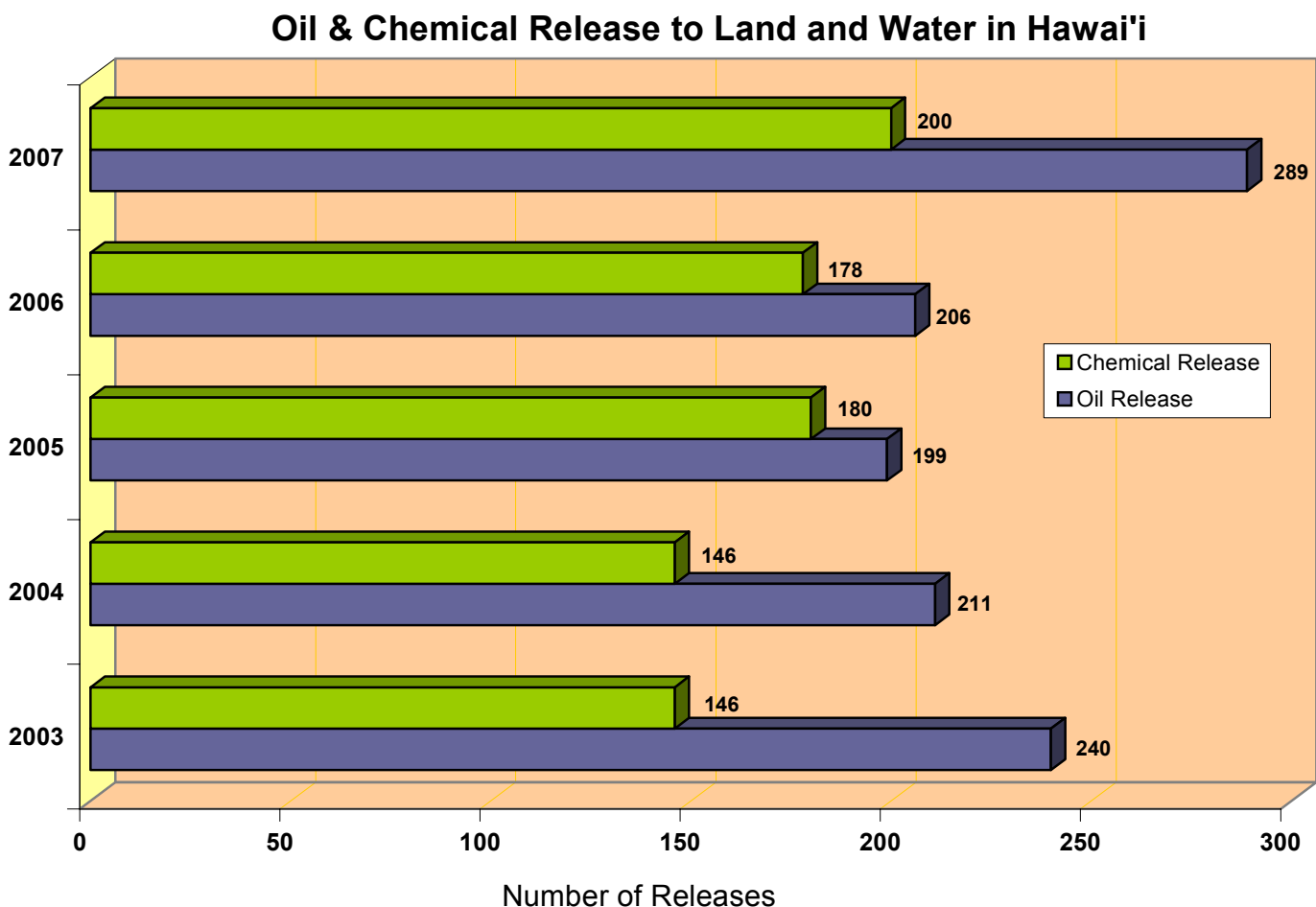
Implications: Hazard Evaluation and Emergency Response (HEER) office crews respond to roughly 400-500 'spills' each year. Most are minor, a few are major, and some are false alarms. An increase in the number of releases does not necessarily correlate with an increase in damage to the environment.

Data Quality: Medium ($\pm 10\text{-}25\%$) confidence.

Source: Marsha Mealey (HEER).

Data are not required by the EPA.

Oil & Chemical Release Data		
FFY	Oil Releases	Chemical Releases
2003	240	146
2004	211	146
2005	199	180
2006	206	178
2007	289	200



Percentage of Population Served Drinking Water in Compliance with State and Federal Microbiological and Chemical Maximum Contaminant Levels

Explanation: Drinking water microbiological or chemical standards are called Maximum Contaminant Levels (MCLs). Water that exceeds MCLs is believed to be harmful to human health. In 2007, 99.1% of Hawaii's residents and visitors were served drinking water that met all of the MCLs all year long. Population figures are derived by summing the populations each public water system reports.

There were a small number of persons (11,682) in three water systems who were served water not in compliance with MCLs for part of the reporting year. This equals a non-compliance rate of 0.9% over Hawaii's population of 1,341,430 people.

Implications: The number of people served water not in compliance increased because 2 medium sized systems and one small system had microbiological violations last year, as opposed to 4 small systems in 2006. Violations are given to a whole system (and thus the whole system population is counted) even though in actuality only a part of the system may have been exposed to water with a positive bacterial count. The compliance rate has consistently exceeded 99.0% over the last five years. Whenever a violation is found, the public is notified through electronic media, hand-delivered notices, or published notices.

Data Quality:
High (\pm 5-10% confidence).

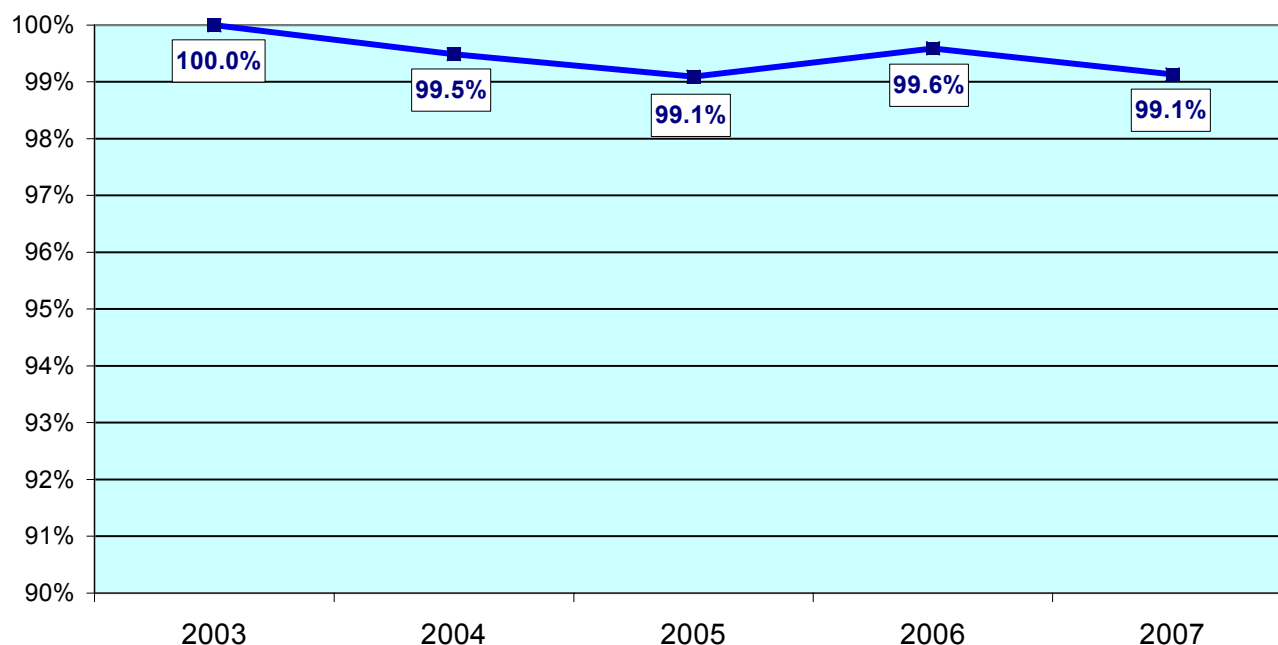
Source: Ann Zane (SDWB)

Data are required by the EPA

Drinking Water MCL Compliance Data

Calendar Year	Total Population Served Drinking Water	Population Served Water Below MCLs	Percentage Population Served Water in Compliance with MCLs
2003	1,300,715	1,300,682	100.0%
2004	1,341,572	1,334,645	99.5%
2005	1,341,727	1,329,510	99.1%
2006	1,341,430	1,335,929	99.6%
2007	1,341,430	1,329,748	99.1%

Percentage of Hawai'i's Population Served Drinking Water in Compliance with Maximum Contaminant Levels



Cumulative Number of Sanitary Surveys Conducted for Drinking Water Systems 2007-2011

Explanation: A sanitary survey consists of a periodic review of the water source, facilities, equipment, operation and maintenance practices and records to verify that a public water system is operating properly. The DOH goal is to conduct “Sanitary Surveys” of all public water system source, treatment, and distribution operations in a five-year period. For Hawai‘i, that averages 26 surveys per year. The SDWB completed the last five-year cycle in 2006, and the next cycle will go from 2007-2011. Because of personnel shortages, implementing new rules and regulations, and dealing with issues regarding national security of drinking water systems, meeting these survey goals will continue to be a challenge.

Implications: The first round of surveys was held from 1997 to 2001, so DOH is embarking on the third round of inspecting these water systems again. Within 30 days of each survey, the SDWB submits a sanitary survey report to the purveyor discussing any deficiencies and recommendations. The SDWB also requests a response from the purveyor within 30 days of receiving the report. When problems are found during surveys, the risk of water contamination is assessed. If the problem poses an imminent risk of contamination to the source or finished water, the SDWB will direct the purveyor to promptly correct the problem.

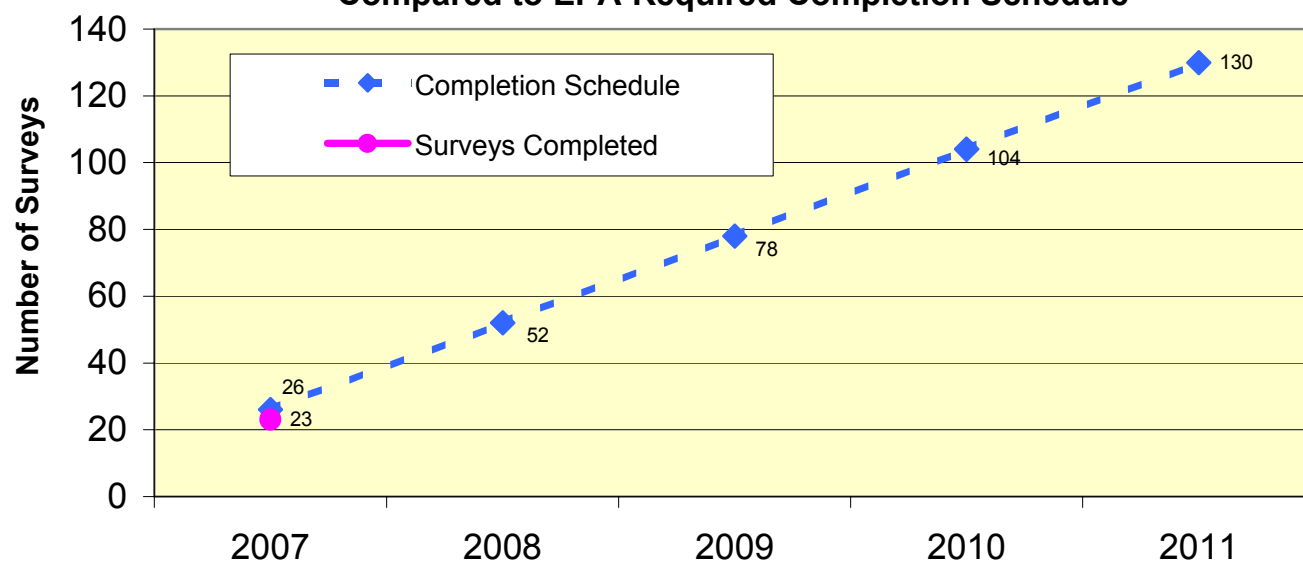
Data Quality:

High ($\pm 5-10\%$ confidence).

Source: SDWB

FFY	Total Number of Systems to Survey (Average of 26/Year)	Surveys Completed Annually (= Cumulative total from 2007)
2007	26	23 (23)
2008	52	
2009	78	
2010	104	
2011	130	

Drinking Water Sanitary Surveys Completed Compared to EPA-Required Completion Schedule



Percentage of Injection Well Facilities in Compliance with State Underground Injection Control (UIC) Regulations

Explanation: The percentage of underground injection well facilities in compliance with state regulations (those with a current permit) for the calendar year 2007 has slightly increased at approximately 52% since the year 2006. Most noncompliant injection well facilities were those for drainage injection wells – wells used for rainfall runoff disposal. The compliance percentage for drainage injection well facilities was approximately 49%. Injection well facilities for sewage disposal and industrial-related wastewater disposal had a compliance percentage of approximately 59%. Permit renewals for sewage and industrial-related injection have processing priority over permit renewals for drainage injection. Heavy workloads of large-capacity cesspool injection well permitting and abandonment applications have negatively affected the overall compliance percentages.

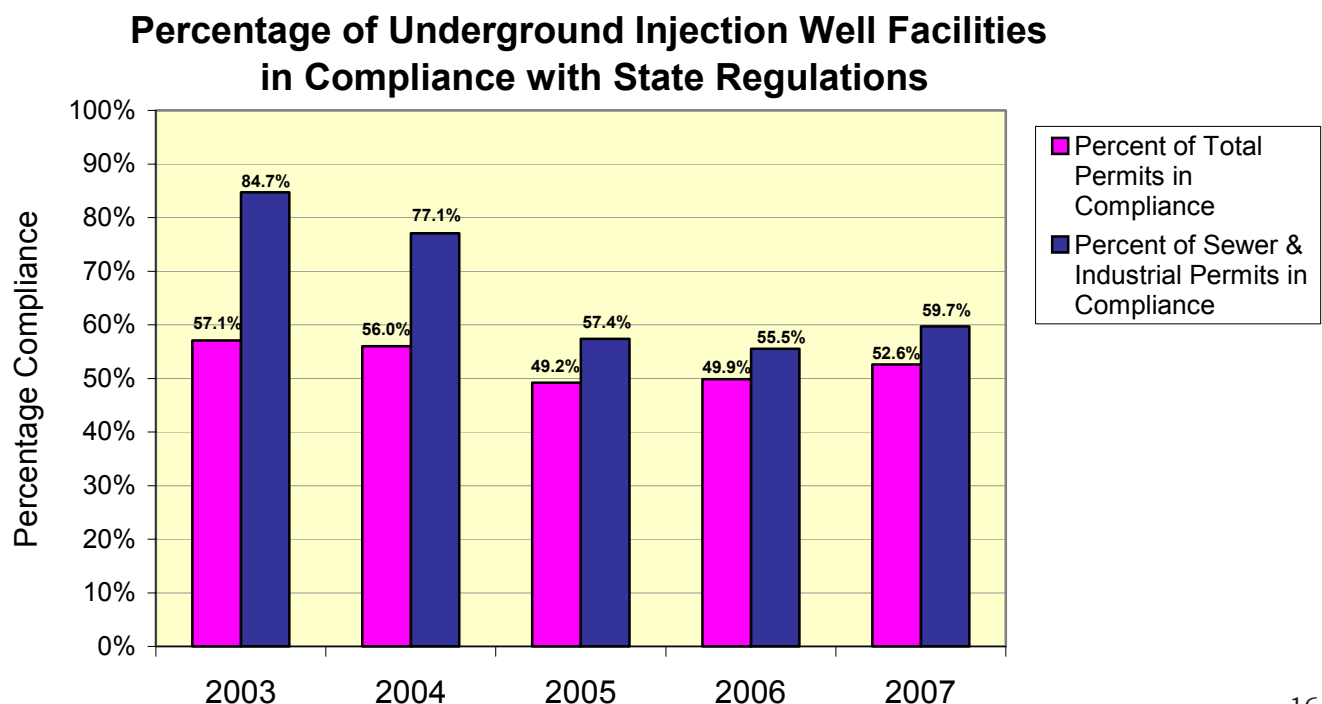
Implications: Drainage injection wells typically pose a lower potential for environmental contamination as compared to industrial or sewage related facilities. However, for counting purposes, all facilities are weighed equally. Injection well abandonment applications were given high processing priority due to the importance of achieving proper backfilling work and accommodating construction schedules.

Data Quality: High ($\pm 10\%$ confidence).

Data are required by the EPA.

Source: Chauncey Hew (SDWB)

Calendar Year	Total UIC Permits	Total Expired Permits	Percent of Total Permits in Compliance	Percent of Sewer & Industrial Permits in Compliance
2003	659	283	57.1%	84.7%
2004	677	298	56.0%	77.1%
2005	679	345	49.2%	57.4%
2006	714	358	49.9%	55.5%
2007	768	364	52.6%	59.7%



Shoreline Postings Due to Sewage or Other Water Pollution

Explanation: Residents and visitors use our public beaches and the ocean for recreation and fishing. Sewage, chemical spills, and other releases can restrict our enjoyment and use of the shoreline as well as affect aquatic life. The following table shows the number of times shoreline waters were posted with warning signs (unsafe due to water pollution) by the counties, military, private parties or DOH. The reports starting from 2005 reflect a major change in that all shoreline recreational waters were considered. Although harbors are not considered recreational waters, they were included to be consistent with the 2005 annual report. Reports prior to 2005 only covered sandy beaches. The 2007 report also distinguishes days posted by different events: dry or wet weather sewage spills.

Implications: There were 152 days of shoreline postings in 2007. The rise in sewage posting days corresponds to heavy rainfalls. There were 17 spill incidents during 2007 that needed postings. For sewage spills, shorelines are first posted, then sampling occurs. The CWB reviews bacteria data prior to allowing removal of the signs.

Source: Clean Water Branch

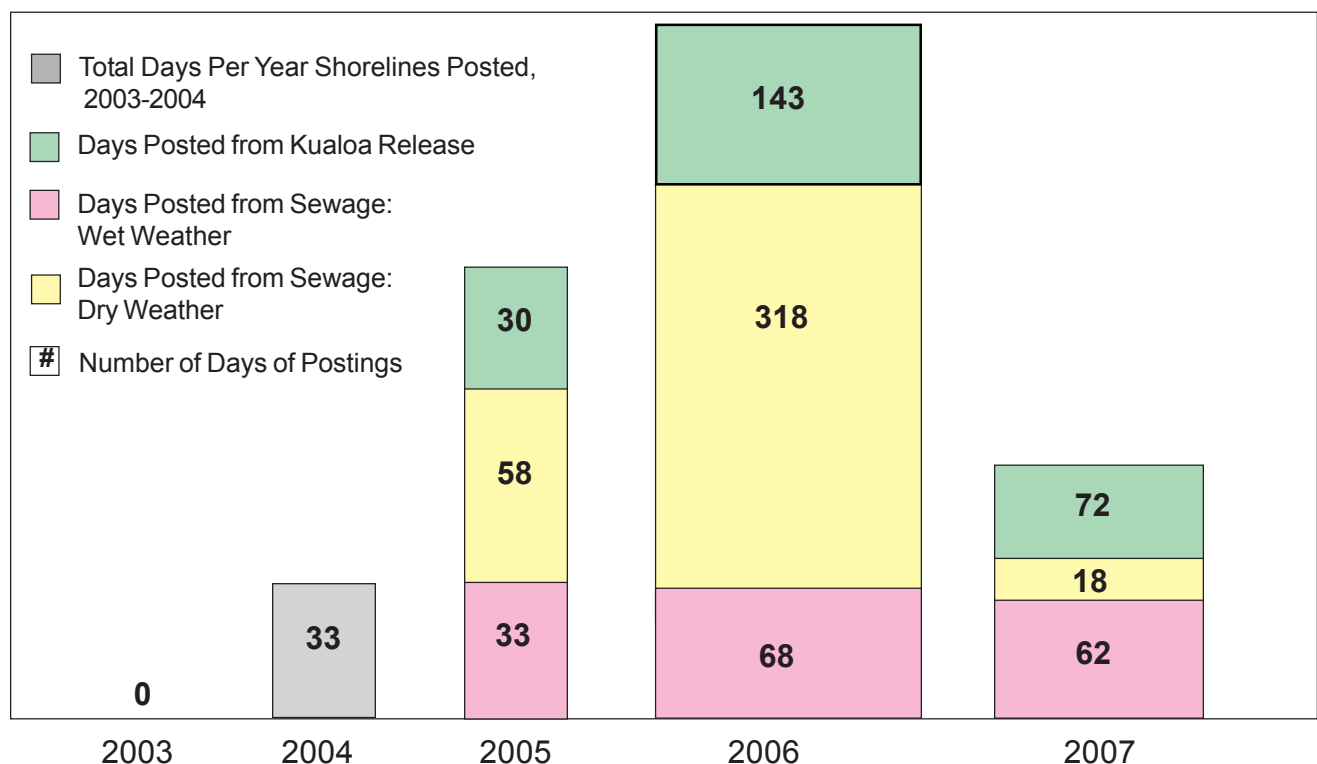
Data Quality:
Medium
(± 10-25%) confidence

Calendar Year	Total Days Per Year Shorelines Posted	Days Posted from Sewage Events
2003	0	N/A
2004	33	N/A
2005	121	121
2006	368	368
2007	152	152

Notes:

- i) These numbers do not reflect postings of warning signs on streams, lakes, and other inland waters, such as the Ala Wai Canal.
- ii) Other agencies may also post other shoreline warning signs. For example, the City and County of Honolulu posts warning signs on beaches after opening stream mouths to drain water. These are not included in this table.
- iii) This does not include "brown water advisories" which are general media releases anticipating or responding to heavy storm water runoff and are not accompanied by actual postings.

Shoreline Postings Due to Water Pollution



Percentage of Wastewater Recycled Annually

Explanation: Wastewater recycling (or reuse of water treated to a level appropriate for irrigation purposes) has stayed in the range of 23.5 to 24.6 million gallons per day (MGD) between 2003 and 2007. In 2007, there was a slight decrease in wastewater reuse due to the deployment of 7,000 troops from Schofield Barracks to the Mideast. In 2006, there was an increase of about 1 MGD, primarily due to the implementation of the wastewater reuse at the US Navy's Barber's Point golf course.

Implications: DOH has plans to encourage reuse to about 30 MGD, or about 20%, by 2015. However, there are concerns that this goal may not be realized, in part due to lack of staff to work on the program.

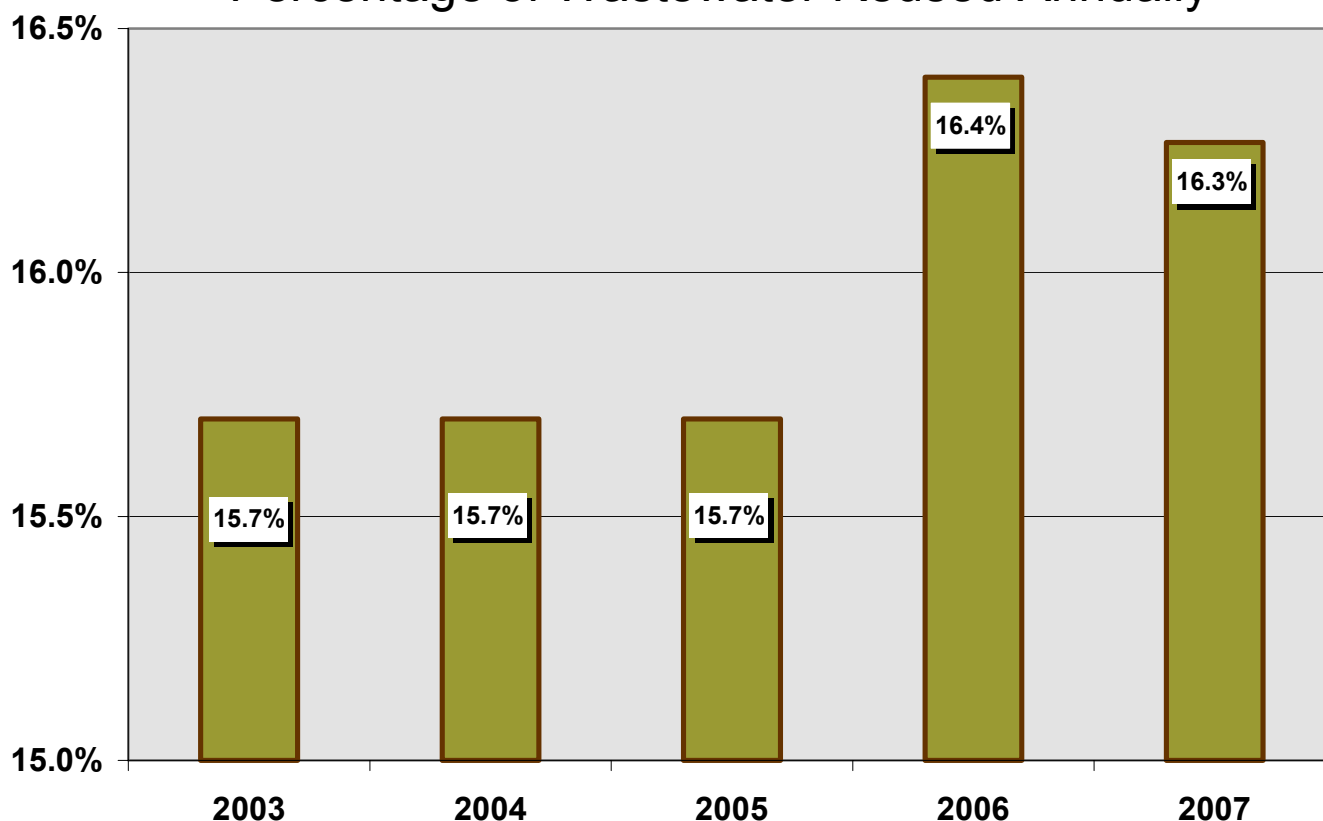
Data Quality: Medium (± 10 -25%) confidence.

Source: Sina Pruder, Tomas See (WWB).

Data are not required by the EPA.

FFY	Total Wastewater Treated (MGD)	Wastewater Reused (MGD)	Percent Reused
2003	150.0	23.5	15.7%
2004	150.0	23.5	15.7%
2005	150.0	23.5	15.7%
2006	150.0	24.6	16.4%
2007	150.0	24.4	16.3%

Percentage of Wastewater Reused Annually



Wastewater Treatment Plant Operations and Maintenance Compliance Records

Explanation: Nearly 70 percent of Hawaii's wastewater treatment plants show full compliance when inspected by Wastewater Branch staff. Major operation and maintenance (O&M) deficiencies, effluent violations, or permit violations warrant an unacceptable rating. In FY 2007, many wastewater treatment plants were found to be in non-compliance because they failed to apply for a Wastewater Management permit issued by the Department of Health. Unlike in past years, recent changes in DOH regulations now require all wastewater treatment plants to have a permit to operate. This resulted in a significant drop in compliance rates for the year. The majority of these plants were being operated and maintained in a satisfactory manner and would otherwise have received acceptable ratings.

Implications: The stated goal of the WWB of 95% compliance by the year 2000 has not been achieved because of O&M deficiencies, effluent violations, and the lack of permits. The WWB staff believe operation and maintenance compliance leads to fewer sewage spills because well-maintained equipment breaks down less often. Another cause of the unacceptable ratings is the number of expired underground injection permits which are covered by the O&M inspection (see page 16 for a discussion of the underground injection permit program).

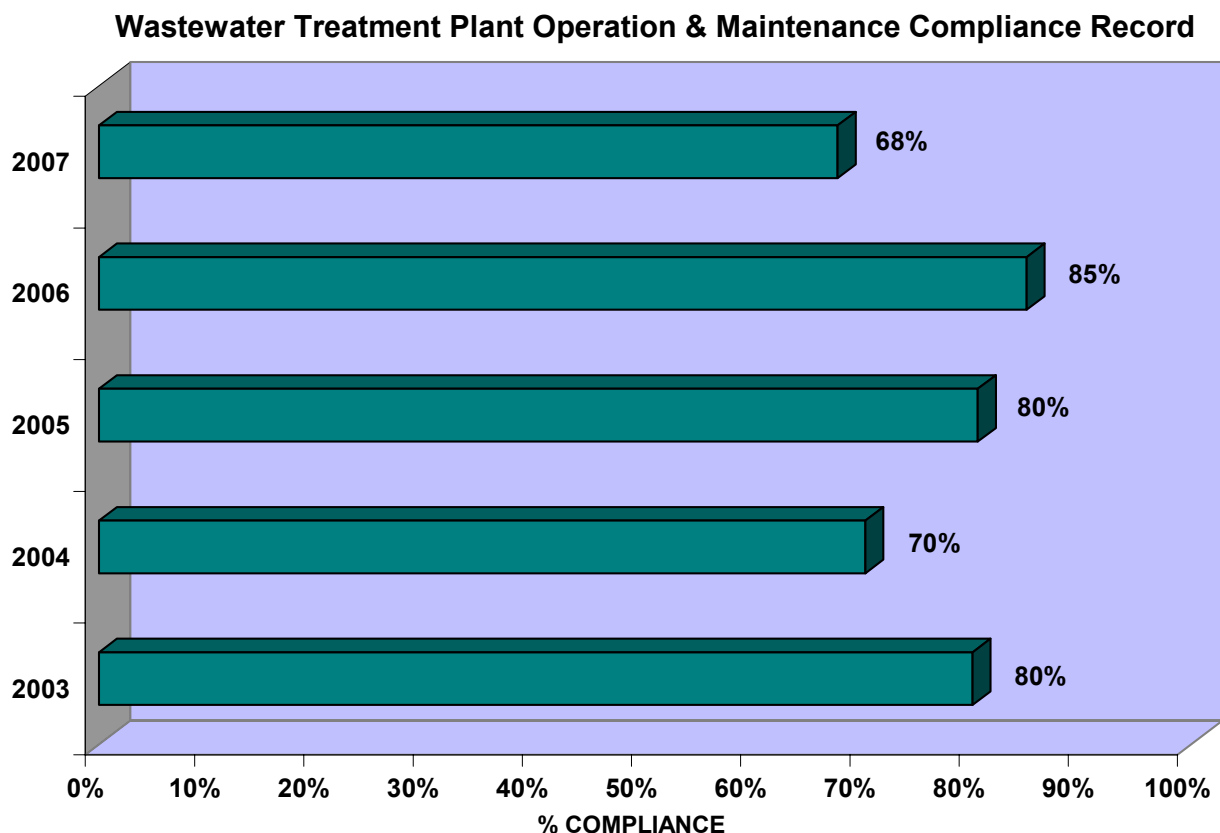
Data Quality:

High (\pm 5-10% confidence).

Source: Marshall Lum (WWB).

Data are not required by the EPA

State FY	Number of Plants Inspected	Number of Plants Rated Unsatisfactory	Percent in Compliance
2003	100	20	80%
2004	57	17	70%
2005	41	8	80%
2006	93	14	85%
2007	102	33	68%



Number of Impaired Streams Listed, 2006

Explanation: This stream quality indicator is based on the “2006 State of Hawaii Water Quality Monitoring and Assessment Report: Integrated Report to the US Environmental Protection Agency and the US Congress Pursuant to Sections §303(d) and §305(b), Clean Water Act (P.L. 97-117).” The report identifies waters where our analysis of readily available data indicated non-attainment of State water quality standards, based on the decision making criteria explained in the listing document (please see www.hawaii.gov/health/environmental/envplanning/wqm/). The 2006 report includes 17 new streams that were not listed in 2004. Several changes occurred within the listings including one delisting and a further refinement of tributaries and estuary systems. Total Maximum Daily Loads (TMDLs) of pollutants must eventually be developed for all waterbodies on the List of Impaired Waters. Currently, TMDLs have been established for four Oahu waterbodies (the Ala Wai Canal, Waimanalo Stream, Kapa’a and Kawa Stream), and are near completion for streams draining into Nawiliwili Bay and Hanalei (Kauai), Waiakea and Alenaio Streams (Hawaii) and Pearl Harbor (Oahu), as well as for Kaneohe (Oahu). New TMDL development projects are underway in Ka’elepulu (Oahu) and Kaukonahua (Oahu).

Implications: This stream quality indicator refers only to the inland part of a watershed with freshwater flows that have salinity lower than 0.5 parts per thousand (ppt), including all stream tributaries. The identification of these streams initiates a process that identifies pollutant sources so that agencies, nonprofits, businesses, and community groups can begin to control these sources of pollution, improve water quality, and protect and enhance aquatic ecosystem health.

Data Quality:

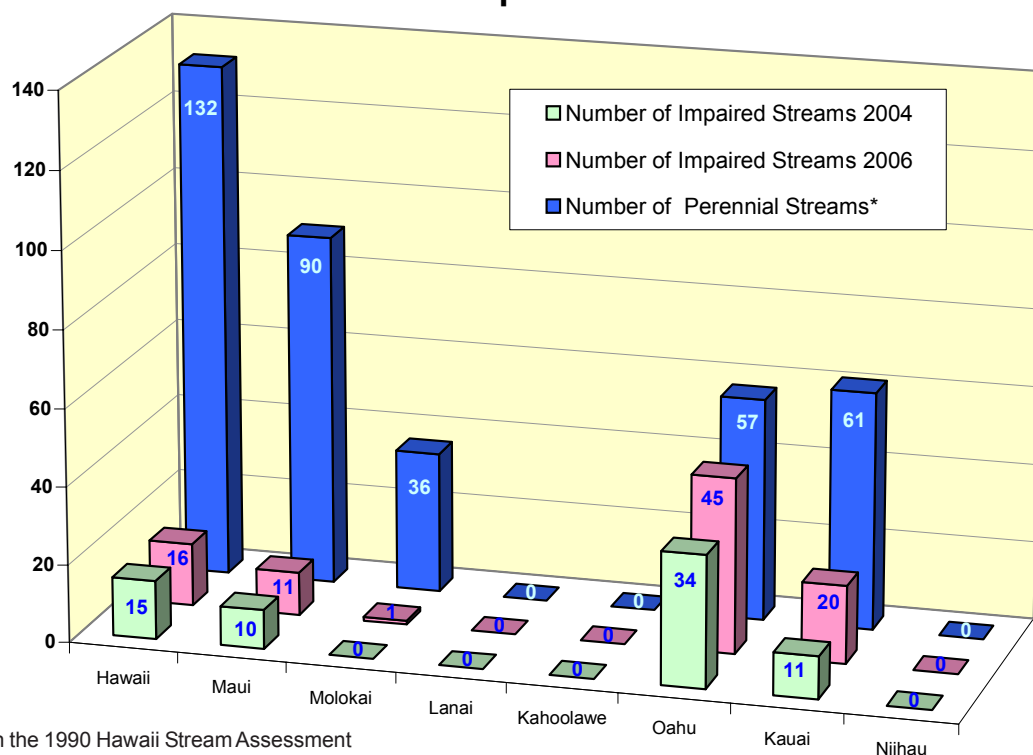
Medium/High (70-80%) confidence.

Source: Linda Koch (EPO)

Data are required by EPA.

Number of Impaired Streams Listed			
Island	Number of Impaired Streams 2006	Number of Impaired Streams 2004	Number of Perennial Streams*
Hawaii	16	15	132
Maui	11	10	90
Molokai	1	0	36
Lanai	0	0	0
Kahoolawe	0	0	0
Oahu	45	34	57
Kauai	20	11	61
Niihau	0	0	0
TOTAL	93	70	376

Number of Impaired Streams Listed



*As identified in the 1990 Hawaii Stream Assessment (Commission on Water Resource Management and National Park Service)

Toxics Release Inventory, Hawaii Report

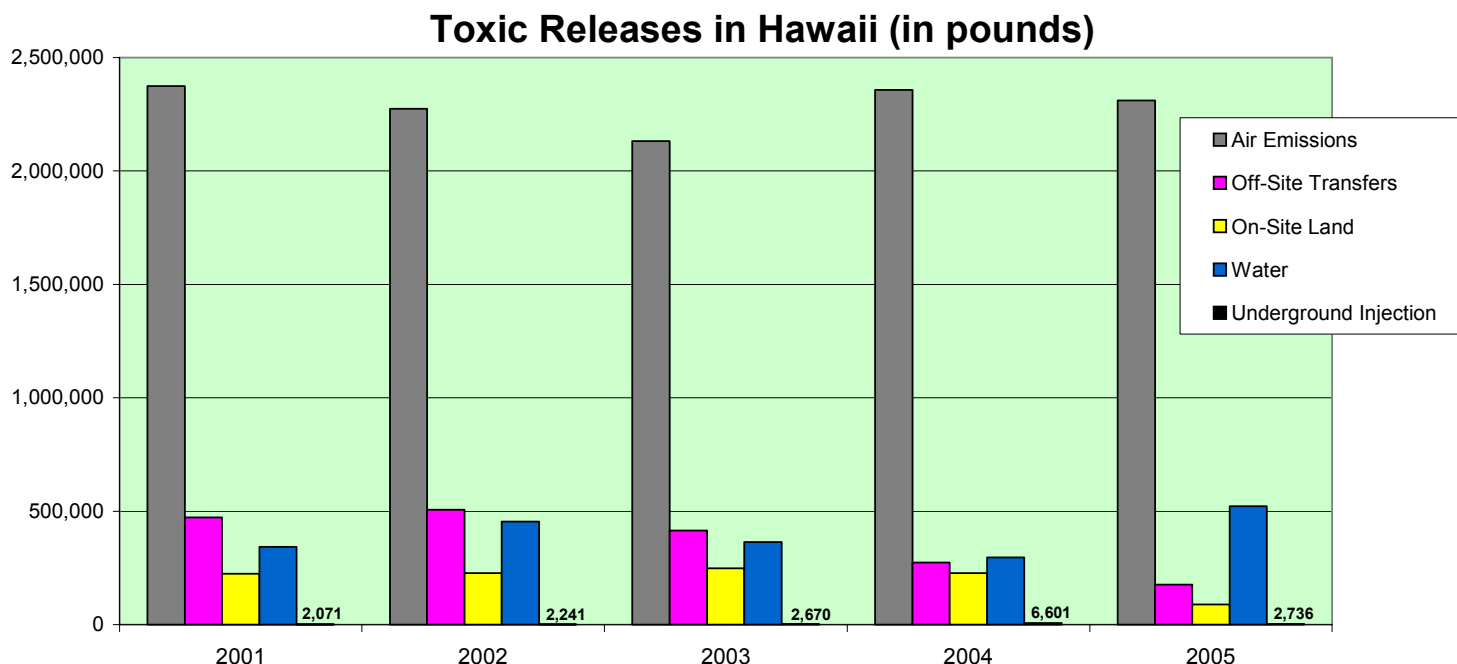
EPA has made public the 2005 data on toxic chemicals that were released to Hawaii's air, water and land. This information comes from the Toxics Release Inventory (TRI), a federal community right-to-know program. In Hawaii, 39 facilities reported a total of 3.1 million pounds of toxic chemical releases.

Hawaii's total reported on-site and off-site releases had 1.9% decrease when compared to 2004 data. However, there was a 76% increase in reported releases to water, with the major contributor being the Pearl Harbor Naval Complex. On-site land releases decreased by 61%, and there was a 35% decrease in reported off-site transfers for disposal and other waste management. Both of these decreases were mainly responsible to reductions from the US Army bases at Schofield and Wheeler. Releases to air decreased by 2%, largely due to Hawaii Electric reporting 110 thousand fewer pounds of air releases.

For more detailed information, including information about Persistent, Bioaccumulative, and Toxic (PBT) chemicals, refer to the EPA website at: www.epa.gov/region09/toxic/tri.

*Release is defined as the amount of a toxic chemical released on-site (to air, water, underground injection, landfills and other land disposal), and the amount transferred off-site for disposal. It is important to note that "release" should not be directly equated with "risk." To evaluate risk, release data must be combined with information about chemical toxicity, site-specific conditions, and exposure.

Toxic Releases in Hawaii (in pounds)					
FFY	Air Emissions	Off-Site Transfers	On-Site Land	Water	Underground Injection
2001	2,374,857	472,297	224,400	343,770	2,071
2002	2,274,706	507,425	228,634	454,684	2,241
2003	2,131,959	415,095	249,267	364,067	2,670
2004	2,358,736	274,015	227,719	296,415	6,601
2005	2,311,630	176,407	89,734	522,217	2,736



Data are not required of DOH by EPA, but EPA does require data from private industries.



For More Information:

**State of Hawaii, Department of Health
Environmental Health Administration**

www.hawaii.gov/health/environmental

Deputy Director for Environmental Health **586-4424**

Environmental Health Administration Offices:

Compliance Assistance 586-4528

Environmental Planning 586-4337

Environmental Resources 586-4575

Hazard Evaluation & Emergency Response 586-4249

Environmental Management Division **586-4304**

Clean Air Branch 586-4200

Clean Water Branch 586-4309

Safe Drinking Water Branch 586-4258

Solid & Hazardous Waste Branch 586-4226

Wastewater Branch 586-4294

Environmental Health Services Division **586-4576**

Food & Drug Branch 586-4725

Indoor and Radiological Health Branch 586-4700

Sanitation Branch 586-8000

Vector Control Branch 483-2535

State Laboratories Division **453-6652**